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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,524	01/16/2001	Bausan Yuan	07303.0031	2126
22852	7590	06/28/2004	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 1300 I STREET, NW WASHINGTON, DC 20005			KIM, PETER B	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/759,524	Applicant(s) YUAN ET AL.	
	Examiner Peter B. Kim	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-29,31-48,50-52 and 76-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 80 and 81 is/are allowed.
- 6) ☒ Claim(s) 17-21,23-29,31-40,42-48,50-52 and 76-79 is/are rejected.
- 7) ☒ Claim(s) 22 and 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's arguments filed on May 11, 2004 have been fully considered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 18, 20, 21, 27-29, 31-37, 39, 40, 46-48, and 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sperling et al. (Sperling) (5,815,246) in view of Nishi (5,477,304).

Sperling discloses in Fig. 1, 2 and 3, a stage assembly for manufacturing semiconductor wafers, comprising: a stage (5) to position a substrate, the stage being moved by a first member (51, 53, 59) of a force generator (45, 47, 49) in response to a wafer manufacturing control system (col. 12, lines 1-34); a base (43), having an upper side (Fig. 1), supporting the stage movable in response to a reaction force generated by a second member of the force generator (57, 55, 61), at least one pneumatic bearing (71) to support the base to movable along a first and a second axis and rotatable around a third axis, where the axis are orthogonal to each other (col. 10, lines 4-31) relative to a stationary surface (69), and at least one actuator (73, 75, 77) to control movement of the base, the movement being caused by at least one of a disturbance force and a reaction force (col. 11, line 30-col. 12, line 34). Sperling also discloses moving the stage and the base in the opposite direction and traveling in inversely proportionate distances corresponding to a stage mass and a base mass (col. 11, line 30-col. 12, line 34). Sperling discloses the base has at least

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one degree of freedom, and the at least one actuator is capable of constraining the movement of base in at least one degree of freedom and generating correction forces in different direction and torque (col. 10, line 32-col. 12, line 34). Sperling discloses a first and second actuators generating correction force in different directions passing through a center of gravity of base and a third actuator generating a correction torque around a direction different from the first and second direction. (col. 11, line 30-col. 12, line 34). Sperling discloses a projection lens assembly (25) comprising the stage assembly, an object on which an image has been formed by the lens assembly and a lithography system comprising the projection lens assembly (Fig. 1). However Sperling does not disclose actuator for generating the correction torque located on the side outer surface of the base. Nishi discloses in Fig. 2, actuators located on the outer side surface of the stage to rotate the stage about the axis perpendicular to the plane of the stage (col. 9, lines 46-59). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to prevent transfer of reaction force and to maintain stable speed as taught by Nishi in col. 13, lines 38-59.

Claims 19 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sperling et al. (Sperling) in view of Nishi as applied to claims 17 and 36 above, and further in view of Sasada (4,750,721).

Sperling discloses the claimed invention as discussed above. However, Sperling does not explicitly disclose that a combined center of gravity of the stage and the base remains stationary. Sasada discloses a movable table system in Fig. 3, with the stage and the base moving in opposite direction and traveling inversely proportionate distances corresponding to a stage mass

and a base mass (col. 3, line 54-col. 5, line 40). Sasada also discloses that the center of gravity of the system remains stationary (col. 8, lines 56-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the table system of Sasada where the center of gravity of the system remains stationary to the invention of Serling in order to prevent vibration of the reaction force from detrimentally affecting the system of Sperling.

Claims 23-26, 42-45 and 76-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sperling et al. (Sperling) in view of Nishi as applied to claims 17 and 36 above, and further in view of Tokuda et al. (Tokuda) (2002/0054280).

Sperling discloses the claimed invention as discussed above. However, Sperling does not disclose the actuators with a damper. Sperling also does not disclose a sensor to detect an actual position of the base. Sperling also does not disclose the actuator with a first unit connected to the base and a second unit connected to the stationary surface where the second unit is connected to the first unit magnetically. Tokuda discloses a stage assembly with a sensor (40) for detecting the acceleration of the base (33), and based on the change of the position of the base, correction force is generated (para. 0107-0109). Tokuda also discloses in Fig. 2, an actuator that moves the counter mass (39, 38) based on the reaction force from the movement of the base (33). The actuator comprises of linear motor (para. 0090-0092) with a damper (Fig. 2). The actuator of Tokuda includes a first unit connected to the base and a second unit connected to stationary member (Fig. 2). Tokuda also discloses using magnetic field and Lorentz force to drive the actuator (para. 0092). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to provide the acceleration sensor and the actuators of Tokuda to the

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invention of Sperling in order to efficiently correct the reactive force affecting the movement of the base.

Allowable Subject Matter

Claims 80 and 81 are allowed.

Claims 22 and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art of reference teaches or discloses a stage assembly with a pneumatic bearing that supports the base with a first layer of pressurized air to move the base and a second layer of pressurized air to allow a top flat surface of the bearings to conform to an undersurface of the base.

Remarks

In response to the arguments Korenaga reference is withdrawn and Nishi reference is used in combination with Sperling.

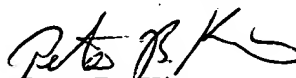
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Peter B. Kim
Primary Examiner
Art Unit 2851

June 24, 2004